UNITED STATES DEPARTMENT OF AGRICULTURE | FOREST SERVICE | SBNF

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Subject: Failing Plantation on 3N34 (FPM Report No. S96-2)

To: District Ranger, Arrowhead Ranger District, San Bernardino National Forest

On April 24, 1996, Resource Officer and Acting District Ranger Veronica Magnuson and Laura Merrill, Entomologist, briefly visited a plantation on 3N34 in the NW quarter of Section 7, T2N, R2W, on the Arrowhead Ranger District. James Allison, pathologist, and Laura Merrill returned to the site on May 9 to determine the cause of mortality.

The plantation consisted of Coulter pines approximately 5 - 8 feet in height, estimated to be 7-15 years of age. There were larger (approx. 15 - 20 feet in height) knobcone x Monterey hybrids which appeared to be growing vigorously. The overstory consisted of Coulter pine, pinyon (P. monophylla), and black oak. The understory was composed of manzanita, mountain mahogany, yerba santa, Ceanothus greggii, and grass. The site would probably be best classified as an ecotone between the pinyon juniper woodlands and the mixed conifer forest.

There was scattered mortality in the young Coulter pines. Some of the dead or dying trees were under attack by Ips engraver beetles, but most appeared to be free of insect infestation. Consequently trees were excavated to examine the roots for damaging agents.

The scattered mortality did not suggest that root disease was active in the area. Both a dead and a discolored tree were excavated. The first tree, which was dead, was found to be growing in ca. 8 inches of sandy loam overlaying a very hard clay layer. The soil was moist. There was dense yerba santa and manzanita growth around the tree, and most of the tree's roots were growing in a bundle on one side (there were also taproots present). Cause of death was thought to be due to 1. shallow soil, 2. brush competition, and possibly, 3. poor planting technique (roots not spread out at time of planting).

The second tree which was excavated was growing in an open area with a small amount of grass understory. The tree was chlorotic. The sandy loam layer at this site was about 2 inches deep, and the underlying clay was extremely hard, sticky, and difficult to penetrate with handtools. It appeared that this tree was suffering primarily from very poor soil conditions, and that the lack of brush around this tree was because of the shallowness of the topsoil. The roots on this tree were evenly distributed around the bole.

Thus, failure of trees in this plantation is probably caused primarily by poor soil conditions, exacerbated in some cases by severe competition from brush. In addition, it is possible that some of the trees were poorly planted.

Management options include doing nothing, removing some of the brush, and mitigating for poor soil conditions. With no actions, mortality will continue, and fuel on the site (both dead trees and brush) will contribute to fire risk. Trees which survive will grow slowly.

Brush removal would release the trees and make the area less at risk for fire. Although some mortality would continue to occur, it would be less than if no action were taken. The Resource Officer is well aware of the benefits of brush removal, but the District lacks personnel and funds to do vegetation control at this time.

Finally, it is possible that poor soil conditions could be corrected in part. The District could consult with a soil expert on this issue.

If you have any further question, please contact Laura Merrill at (909) 884-6634 ext. 3199, or James Allison at ext. 3123.

Laura Merrill

Laura Merrill, Entomologist

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